

Update to NIOSH National PPE Surveillance and Intervention Program for Agricultural Pesticide Handlers

Kim Faulkner, Ph.D.*, Dennis Groce, Ph.D.†

* NIOSH National Personal Protective Technology Laboratory (NPPTL), †Badger Technical Services, Inc.

Objectives

- 1) Determine if pesticide PPE is correct and used properly
- 2) Identify barriers to best PPE practices
- 3) Design, implement, and evaluate interventions

Significance

Reports of pesticide poisonings, morbidity, mortality, and lack of adherence to PPE requirements indicate a need for this work.

Morbidity:

- Estimated 18,000 pesticide poisonings annually (Calvert, 2011)
- Other studies: Dermal, ocular, digestive, neural, teratogenic, thyroid dysfunction, cancer, semen effects (Gonzalez-Herrera, 2010; Lacasana, 2010; Baldi, 2011; Koutros, 2010; Kokouva, 2011; Hossain, 2010; Wesseling, 2010)

Cancer mortality:

- lymphohematopoietic
- melanoma
- digestive system
- prostate
- kidney
- brain (Waggoner, 2011)



Figure 1. Pesticide application equipment on an Amish farm.



Figure 2. Pesticide handler cleaning equipment.

Improper use of PPE:

- National and State-based studies (Stone, 1989; Tondl, 2000; Greskevitch, 2007)
- Oregon OSHA/WPS violation data – 36% of randomly selected high-risk agricultural establishments (2000-2007) had at least one PPE violation (Faulkner, 2010)

Methods

Develop partnerships with diverse stakeholder groups

Visit farms to speak with pesticide handlers (WA, OR, and PA)

Identify barriers to best PPE practices: Eight national brainstorming meetings with over 100 stakeholders (March – June 2010) and seven agriculture meetings

Develop and implement interventions: PPE exhibits at seven agriculture meetings

Results

National partnering network of 800 stakeholder experts established

Barriers to best PPE practices identified:

- Incorrect type of PPE is used
 - Don't know correct PPE to wear
 - Pesticide label or PPE manual is not clear
 - Pesticide safety training is inadequate
 - Supplier guidance is inadequate
 - Limited access to correct PPE
 - Correct PPE not available
 - Information from distributors lacking
 - Labels and manuals not clear
 - Correct PPE is not accepted
 - Safety is a low priority
 - Discomfort
 - Don't understand health hazard
 - Poor function
- PPE is improperly worn, stored, decontaminated, inspected, maintained
 - Don't know how to use the PPE
 - Pesticide label or PPE manual is not clear
 - Pesticide safety training is inadequate
 - Supplier guidance is inadequate
 - Proper PPE use is not accepted
 - Hinders productivity
 - Don't understand the hazard
 - Safety is a low priority
 - Discomfort
 - Poor function for the job



Figure 3. Display to demonstrate proper eyewear which meets EPA requirements for pesticide applicators.



Figure 4. Chemical resistant glove display to demonstrate the variety of materials available and that not all materials are equally chemically resistant against all classes of pesticides.

Interventions:

Survey developed: The first comprehensive survey of PPE practices and barriers to best practices was drafted and reviewed by 30 expert partners.

NIOSH 2011 PPT stakeholders meeting, March 29, 2011:

A Safety Roadmap for Agricultural Pesticide Handlers: Overcoming Barriers to Optimal Personal Protective Equipment (PPE) Use



Figure 5. Display to show differences between laminated and unlaminated chemical protective suits.



Figure 6. Mr. PPE demonstrating the variety of PPE worn by pesticide handlers.

Conclusions

Preliminary information suggests poor PPE practices. Standardized assessment of PPE practices is needed to better target effective interventions.

Acknowledgements

We acknowledge all 800 partners, a few are U.S. EPA, Oregon OSHA, cooperative extension staff, US and State Depts. of Agriculture, numerous advocacy organizations, pesticide and PPE manufacturers and distributors, growers and other pesticide handlers.

References: available upon request

Disclaimer: The findings and conclusions in this poster have not been formally disseminated by the National Institute for Occupational Safety and Health and should not be construed to represent any agency determination or policy.